Heat wave: first, protect the vulnerable

Background and epidemiology: The health impact of heat waves in the United States were described in 2 recent reports.[1,2]

- A 4-month-old boy was found dead in his parent's car, in which the temperature was 47.8°C.
- An 81-year-old woman with dementia was found dead on the roof of a residential care facility, where the ambient temperature was 35.6°C.
- A 34-year-old woman with schizophrenia who was found dead in a group home had a liver core temperature of 41.2°C.
- An 84-year-old man found dead in bed when the outdoor temperature was 32°C had his thermostat set on heat.
- A 24-year-old man with depression was found dead in his apartment, where the room temperature was 37.2°C.

These sombre events drive home the primary public health message concerning heat waves: when the weather gets hot, the vulnerable are at risk. They include infants, people who are elderly, homeless or poor, and people who have a chronic or mental illness. Factors that increase the risk of hyperthermia during heat waves include social isolation, alcohol consumption, prolonged physical exertion, use of certain drugs (neuroleptics, antipsychotics, tranquilizers, anticholinergics) and lack of air conditioning.[1,2] Most heat-related deaths can be prevented. Relatives, neighbours and caretakers of people at risk should know about heat-related hazards, recognize the symptoms of heat-related illness and take appropriate action.

Many Canadian cities are subject to hazardous summer weather.[3] The country's weather service uses the Canadian-developed humidex to report heat stress. The humidex is a bivariate index that combines the health impact of temperature and humidity. The scale ranges from < 30°C to > 54°C. Some discomfort may be felt above 30°C; at readings of 40°C and higher, people will feel great discomfort and should avoid activity.[4]

A retrospective examination of the relation between humidex readings and mortality rates in Toronto between 1980 and 1996 revealed an average of 3.5 excess total deaths per day when humidex values were 40°C–45°C.[4] Over 17 years these values were reached 2 days a year on average. Excess deaths were also observed when the humidex was 30°C–39°C, which led the authors to conclude that the comfort levels associated with the humidex classification scheme may not correctly describe the health effects observed in Toronto. Propelled by accumulating evidence, Toronto's Public Health Department is currently involved in an initiative to use a heat-alert system based on 8 different climatic factors, including temperature, cloud cover, humidity, wind speed and direction.[5]

Clinical management: Heat-related illness can begin as sunburn and fatigue and progress to heat cramps, heat exhaustion and heatstroke. Patients with heat exhaustion will have normal findings on neurologic examination, although they may complain of headache, dizziness and weakness. Heatstroke is a total breakdown of thermal regulation, presenting as the classic triad of core temperature greater than 40.5°C, central nervous system dysfunction and anhidrosis.[6] Heatstroke is a medical emergency with a death rate as high as 33%. Initial attention must be paid to the ABCs of resuscitation, with rapid reduction of core temperature to 40°C the primary goal. Some clinicians favour evaporative cooling (positioning fans close to the completely undressed patient and sponging the skin or spraying it with tepid water[6]), and others advocate immersion[7] (drenching the patient with sheets soaked in ice water or immersing the person in a tub of ice water, or both). The complications of heatstroke include hypotension, electrolyte imbalances, seizures and cerebral edema.

Canapress

Hot time, summer in the city

Prevention: An increasing number of cities in Canada and the United States have started to issue heat warnings and develop and implement heat-wave response plans. These include educating the public about the hazards of heat, communicating with agencies that work with vulnerable populations during heat alerts, establishing cooling centres at libraries and community centres and providing water and transportation when needed. Your local public health unit can provide more information.

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